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ABSTRACT

This paper describes the aims, organization, and outcomes of a technology assessment activity that was part of a summer school for an undergraduate interdisciplinary women's studies course at the Open University of Great Britain. Entitled "The Changing Experience of Women," the course contained a technology assessment module for the examination of contraceptive technology. The activity was designed to demonstrate that technology is not a value-free or genderless activity; to teach basic skills of technology assessment, especially from a feminist perspective; and to build the confidence of women students so that they could use the technology assessment skills and their own experiences to evaluate aspects of technology that were especially relevant to them. The activity module included slide presentations, lectures, brainstorming sessions, and group discussions. The basis for the discussions and brainstorming activities was the effects wheel model, which posits primary, secondary, and tertiary effects for changes. Included is a summary of specific discussion on a "male birth control pill." Evaluation of the module was primarily impressionistic, but it was seen to be highly successful. An address and price information for obtaining a copy of the module are included. The text is supplemented by three figures, and two references are provided. (EW)

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USING TECHNOLOGY ASSESSMENT TO BUILD CONFIDENCE AND TEACH CRITICAL SKILLS TO ADULT WOMEN STUDENTS

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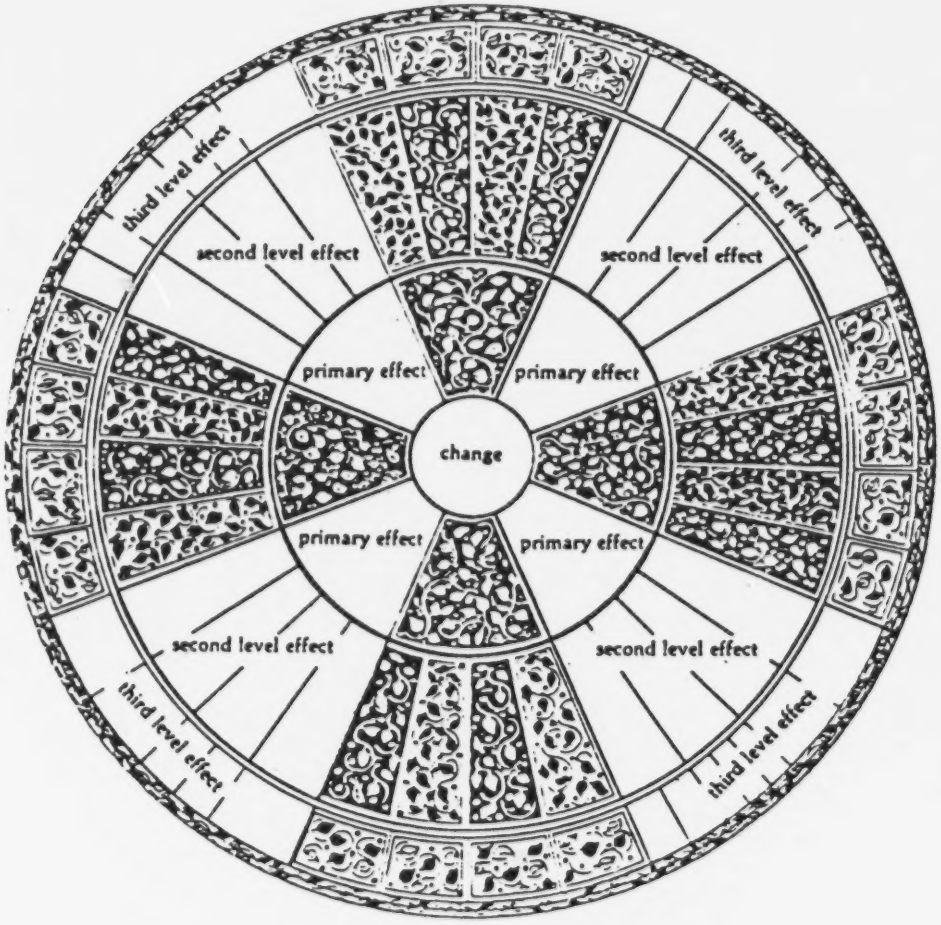
Figure 1 Model of an effects wheel



Source: Bush (1982)

This paper is a brief description of the aims, organisation and outcomes of a technology assessment activity which is part of a summer school for an undergraduate interdisciplinary women's studies course at the Open University (UK). We, the authors, believe that this type of activity helps develop critical consciousness about technology and is especially appropriate to introducing a critical analysis of technology to students with no prior technical background. Further information about our ideas and the activity itself can be found in a report available from the authors (1).

INTRODUCTION

Technology has become a gendered area of knowledge and work. The predominant roles open to women are those of unskilled production workers and consumers of technology, and, the gendered nature of technology ensures that women's special needs are not taken into account either as workers or consumers. Any real change in women's relationship with technology must include changing the way technology is constituted and perceived, as well as developing women's understanding of it and building their confidence to influence future developments in it.

Unless there is a radical and rapid restructuring of the job market most women, and many men, will never work in scientific or technical jobs, and formal education has done little to address the needs of these people with regard to the technology in their lives. What seems to have been promoted is an awe of experts, especially 'scientists', and an uncritical enthusiasm for more flamboyant aspects of technology. Whereas, an informed populace needs to be able to think critically about technology and its effects, and exercise deliberate control over it. The main aim of education is, after all, to transmit skills and knowledge which enable people to take control over their own lives. It is this aspect of women's education that concerns us most. Our Technology Assessment (TA) activity was designed with these aims in mind. It operates at the cognitive and affective levels, dealing with both knowledge and confidence building, as well as providing a technique which enables students to get access to unconscious feelings and concerns.

Technology Assessment can be used to question the values inherent in the development of technology and to raise awareness of the structure of the technological world we are embedded within. TA has the potential for analysing the intended effects of technology and through this to question aspects of technological society. However, although TA is a widely used tool it rarely, if ever, contains an explicit assessment of the impacts of technology on women, which it could do if it asked questions, such as; Does this technology expand

options or reduce them? Promote equal employment opportunity? Affect gender-role for either sex? Result in an equal distribution of economic and social benefits between women and men? Exceptions are the work of Vary Coates (date unknown), and Corlann G Bush (1982), and this activity draws on their work in attempting to develop feminist assessment criteria.

The activity is part of an interdisciplinary (although mainly social science) women's studies course. It is usual for scientific and technical courses to have an input of 'liberal studies' but it is not usual for social science and arts courses to have a technology input. Although there are problems with introducing 'tastes' of disciplines into courses where they play no major role, we feel that, given the present alienation of women from technology, this is one of the best ways for the area to be introduced.

One of the potentials of this type of activity is that it can be used both within and outside of formal educational settings. Indeed, it uses techniques that are more like those used in informal educational situations: discussion in small groups, stress on confidence building and the use of students' own experience.

THE CONTEXT: THE INSTITUTION, THE COURSE, THE STUDENTS

The Open University is designed to provide undergraduate and continuing education for mature adult learners, many of whom have not had the opportunity to do full-time higher education, and many of whom would not gain entry to the usual higher education institutions because they have not got the required entry qualifications. Almost 50% of the student population are women. Courses are taught by distance teaching methods: printed text sent by post, broadcast TV and radio. Apart from Summer School (a one week residential course held on a university campus) almost all studying is done by students in their own home, with only about 8 hours face-to-face tutor contact.

The Changing Experience of Women is an interdisciplinary course which draws on material from various academic fields to examine the differences between men's and women's lives in present day Britain and to analyse the social and historical processes which have contributed to these differences. The course has been running since 1983 and has 600-700 students every year; of these about 8% are men. Of the women students the largest occupational category is "housewife" almost 40%, and many have good prior educational qualifications, 25% with 'A' levels, and 20% with a teaching certificate. However very few were interested in taking technology courses as part of their Open University study; less than 5%. The study of women and technology was not a major part

of the Changing Experience of women, and the five hour technology assessment module was offered as an optional activity in the summer school timetable.

Our problem was to design an activity which would be tutored by people not chosen primarily for their background in technology. The activity had therefore to be carefully and clearly structured with explicit notes of guidance for the tutor, and yet should allow some flexibility so that where tutors had special relevant skills or interests these could be incorporated.

THE AIMS AND OBJECTIVES OF THE ACTIVITY

We had three broad areas of aims for the activity. First the theoretical: we wanted to demonstrate that technology is not value-free or genderless, and that patterns of technological change in society depend upon a combination of social factors and historical circumstances so that changes in society are related to changes in technology. We wanted students to examine the notion that women are more alienated from the technology they experience than are men. Second, a practical aim: we wanted to teach a few basic skills of Technology Assessment and attempt to produce female sex-role impacts of technology and develop feminist technology assessment criteria. Finally an affective aim: we wanted to build confidence in the women students, so that they could use the Technology Assessment skills and their own experience to evaluate aspects of technology that are specially relevant to them. This, we hoped, would help demystify technology, in the sense of laying open its main principles, modes of operation and systems of social control. We operationalised these aims into seven students performance objectives, which are listed below.

After completing the activity students should be able to:

1. Describe and discuss the impact of a range of contraceptive techniques on women's lives.
2. Describe how technical innovation in contraception has been closely interrelated with social attitudes and ideology.
3. Describe the purposes and process of Technology Assessment.
4. Use a Technology Assessment procedure (brainstorming and effects wheel) to examine first-and second-order effects of contraception on women.
5. Develop a feminist perspective for Technology Assessment and be able to use this in examining the impact of any area of technology on women's lives.
6. Be critical of non-feminist Technology Assessment by using examples.
7. Know what forms of further action or activity could be engaged in so as to make an input to the development and application of technology

Session A (3-4 hours including tea-break)

(i)	Short introductory presentation by one tutor to all students	(10 minutes)
(ii)	Tape-slide presentation on Contraceptive Technology to all students	(30 minutes)
(iii)	Introduction to Technology Assessment and example using effects wheel	(15 minutes)
(iv)	Brainstorming session and effects wheel	(1 hour)
	Tea-break	
(v)	Presentation using effects wheels and discussion of feminist perspective to Technology Assessment	(1 hour)

Session B (2 hours)

(i)	Presentation of video compilation and material on the development of bicycle technology	(20 minutes)
(ii)	Use feminist perspective on TA developed in Session A to assess transport design	(40 minutes)
(iii)	Present the effects wheels and discuss the overall activity	(30 minutes)
(iv)	Look at resource packs on women and technology and discusss ways ahead	(30 minutes)

A BRIEF DESCRIPTION OF THE ACTIVITY

A schedule for the activity is presented above

The first session began with a half-hour tape-slide presentation which described the developments of contraceptive technology: herbal, mechanical and chemical. It places the innovations in their historical and social context. The presentation focusses on who is involved in initiating technological changes and why resources are allocated to the development of certain technologies rather than others. Contraceptive technology was chosen as a case study because it is an area of technology that affects most women at some time in their lives as a personal and political issue.

After students had seen the tape-slide the tutor gave a brief account of the nature of technology assessment. She emphasised its potential for investigating the effects of the technology on the individual, the environment, the culture, other technologies and on society. She described the nature of first and second-order effects. Students were then told the procedure and shown a worked example, using the effects wheel Figure 1(Bush 1982) The women participating in the activity were told to concentrate their assessment on the impact on women. They were then asked to try and produce a list of assessment criteria or questions that could be used to assess any technology

for its effects on women in particular.

Students then organised themselves into small groups of about 10 for the brainstorming session. Each group was given a speculative open ended 'what if' type of question about contraceptive technology to work with, from a list held by the tutor. (Details of the operation of the brainstorm are given in our report.)

In response to one of these questions, but after a few minutes of silent thought, one member of each small group recorded the ideas of all the individuals in the group. Students spent about 20 minutes generating this list of first-order impact statements. One of these statements was then taken and a 'what if ...' question formed around it. A brainstorm was then conducted on this question and the ideas written down onto another sheet of the flip-chart. These are the second-order impact statements arising from the technological change. Finally the brainstorm was repeated again for third-order impact statements.

Students then drew up their sex-role impact statements on an effects wheel and evaluated the impacts in terms of their likelihood and desirability by giving scores of likelihood (1-5) and desirability (+10 to -10) to the impacts identified following Bush (19). Using the effects wheels students could begin to see the possible longer term effects of the change they were examining and consider the likelihood and desirability of these. The groups then reassembled together to exchange ideas.

Material produced from all the groups was stuck on the classroon walls and each group explained and analysed their ideas and the routes they took through the different orders of statements. Groups were then able to compare the sex-role impacts to see how many ideas were common and how far groups had rated ideas the same on scales of desirability. A whole class discussion drew out the common themes for all the groups. These common themes became more general feminist criteria for assessing technology. The groups also discussed the actual activity, its usefulness and pleasurableness.

After a break for dinner students completed the final part of the activity. They were shown a short edited video programme about the development of the bicycle which illustrates how the initial development was seen as very liberatory for women, but, how as time has progressed the image of the bicycle has become that of a piece of technology for male use. Students were then asked to consider the future development of transport for women bearing in

mind the question and criteria produced in the first part of the activity, and using the brainstorming technique used there.

Finally there was a general discussion where all aspects of women and technology were addressed using collections of resource material. The emphasis here lay on what activities and actions could be engaged in for the future, both for individuals and for groups.

AN EXAMPLE OF ONE OUTCOME

There is only space in this paper to give a flavour of the sort of work produced by the students. The following is an example of what groups of students produced in response to one question.

Brainstorm Question: 'What would happen if there was an Effective Male Pill?'

Nine groups took this question i.e. about ninety women. The first order impact statements generated by the question on 'effective male pill' concerned the possibility that male control over fertility would increase, with a consequent loss of female control, for example: "Would the women partner be asked permission?" These were coupled with fears that men could not be trusted to do as they say e.g.: "cheating by men". Along with this loss of control over pregnancy was the feeling that male sexuality in aggressive forms would increase, for example, there were comments such as "more promiscuous men", and associated with this the increase of venereal disease. The majority of the first-order impacts can be regarded as reflecting the women's fear and mistrust of men. These first-order sex-role impact statements, selected from their assessments, are summarised in the lists of negative and positive impacts in Figure 2.

There were few positive first-order sex-role impact statements from the nine groups as the list below shows. What might be seen as the most obvious benefit - freeing women from taking dangerous/unpleasant contraception was only mentioned by two of the groups.

Each brainstorm group formed an open-ended or 'what if...' question around a first-order impact statement to develop second and third-order effects for this technology (i.e. effective male pill). Patterns of technological change - from first to second to third-order effects - is shown on the effects wheel segments, Figure 3.

The pattern of change demonstrates that five groups began by choosing a statement about men controlling some aspect of women's lives. There was only one way in which this greater control over reproduction by men, was seen

to have beneficial outcomes for women, this was in the case of childcare. It was suggested that increased male responsibility for procreation would lead to increased involvement in childcare and a large number of groups had such second and third-order statements. One group took this for their third question to develop third-order impacts: 'What would happen if husbands took more responsibility for childcare?' They produced the only consistently positive list of effects among all groups, suggesting better employment opportunities for women, better childcare provision, more satisfying marriages and an improved home environment for children.

The general impression is that the prospect of a male pill is responeded to very unfavourably leading to an anticipation of, and assessment of, negative changes.

DISCUSSION AND EVALUATION

Underlying the particular sex-role impacts identified, are more general themes or concerns which affect women, as consumers of these technologies. There were three main themes or feminist criteria uncovered during the contraceptive TA.

The first was to do with fear and mistrust of male control over contraception. This was particularly strong with the question about the development of an effective male contraceptive. The notion that the technology enables women to participate more fully in society than they could without contraceptives is balanced by an associated fear of a retreat back to traditional sex-roles with the removal of the technology. Contraceptive technology, in this sense, was seen by some as a 'technological fix'.

The second theme was a concern for women's health, emotionally, psychologically and physically. The third theme dealt with the availability of technology and was linked with mistrust of (male) experts who are responsible for making contraceptives widely available and the cost of different methods.

The TA of transport technology generated other criteria which cannot be dealt with here (see Report).

We designed no objective measures of evaluation for the activity, but collected comments and reports from tutors and students as well as tutoring and observing ourselves. On a number of different criteria the activity was successful. Students wanted to do it. Most students and tutors were enthusiastic and reported that they had enjoyed the activity. However, some tutors and students were very critical of the activity. We found that if tutors did not

Figure 2 "Male Pill" Impact Statements

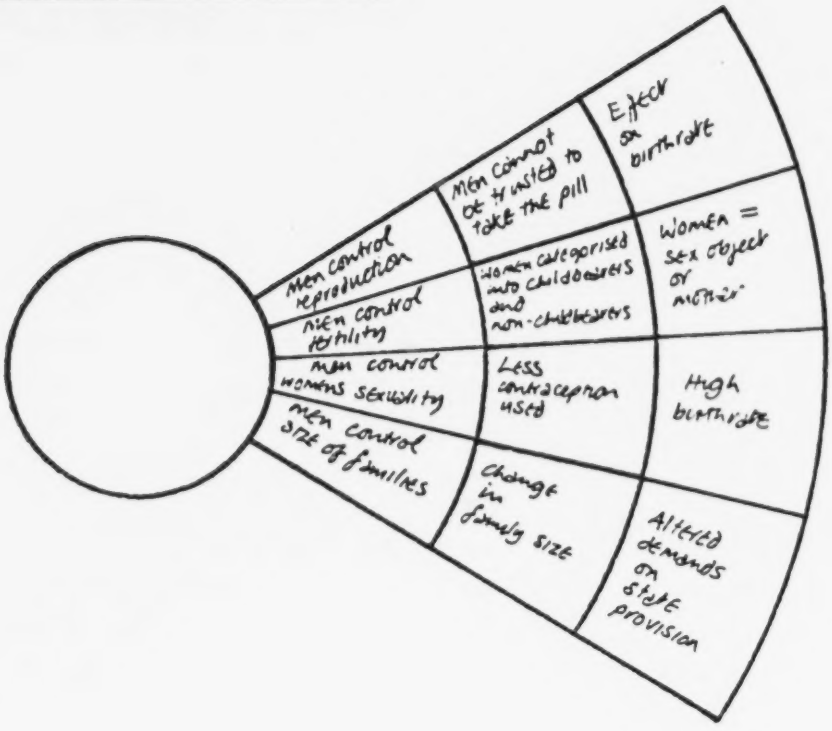
Negative First-Order Impacts

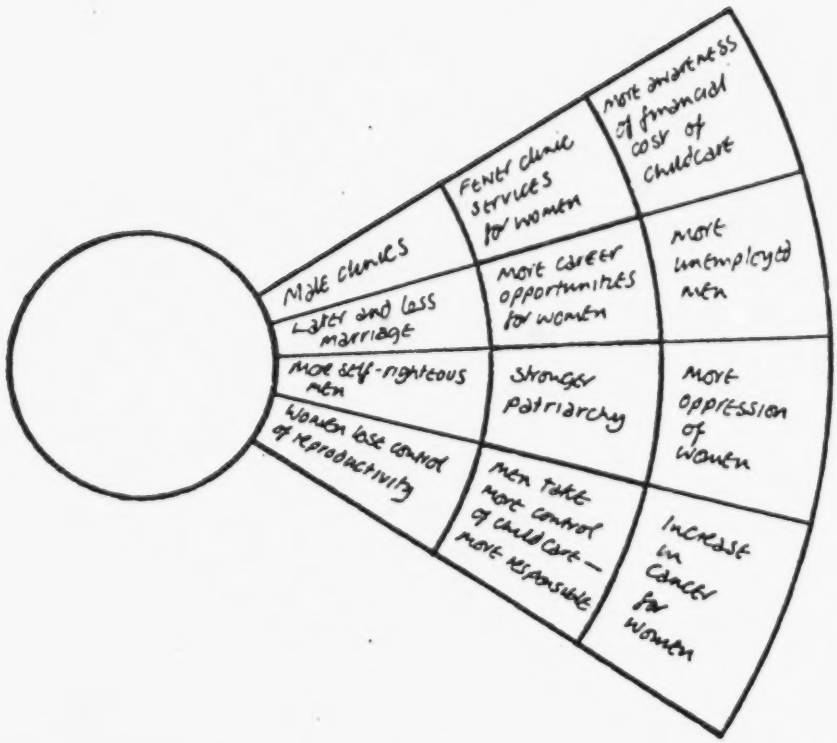
- Men control reproduction.
- Men control fertility.
- Men control women's sexuality.
- Men control size of families.
- Later and less marriage.
- Male devices.
- More self-righteous men.
- Would men take it?
- Women would become pregnant unwillingly.
- Women would become more subservient to men.
- Limit sexual feedom of women.
- Increase sexually transmitted diseases.
- Abortion discouraged/banned.
- Abortion encouraged.
- Men demand control over children.
- More power to men.
- More sexual attacks on women.
- More promiscuous men.
- More arguments over who takes the pill.
- More lustful men/rape.
- Forgetting to take the pill.

Positive First-Order Impacts

- Positive effect on health.
- Less unwanted births.
- Make contraception easier for women who can't take the pill.
- Women healthier.
- Demands on men to take control over childrearing.
- Women stop taking the pill.
- Women released from fear of pregnancy and side effects of contraception.

Figure 3 "Male Pill" Effects Wheel


Men control reproduction
Men control fertility
Men control women's sexuality
Men control size of families
Men cannot or ? insted to take the pill
Women categorised into childbearers and non-childbearers
Less contraception used
Change in family size
Effect on birthrate
Women = sex object or mother
High birthrate
Altered demands on state provision


Male clinics
Later and less marriage
More self-righteous men
Women lose control of reproductivity
Fewer clinic services for women
More career opportunities for women
Stronger patriarchy
Men take more control of child care — more responsible
More awareness of financial cost of childcare
More unemployed men
More oppression of women
Increase in cancer for women

fully appreciate the importance of highly structuring the brainstorming, then the student group became engaged in a discussion, which they afterwards felt was very little different from an informal conversation.

We were impressed with the quality of the ideas produced in the sessions. Although our aim in using the activity was an educational one, the quality of the outcomes from a 'non-expert' population, and the ability of the brainstorming technique to bring to the surface unconscious worries and concerns, suggests that this technique is a useful way for groups to explore feelings and worries about issues to do with potential social and technological change. The issue of how far students' critical consciousness was developed through doing the activity is open to question. There is no way of knowing how much students had individually thought of any of the questions raised in the activity, prior to attending summer school. The experience of watching students brainstorming, and our analysis of the outcomes leads us to believe that the groups were developing ideas and themes that no one individual had consciously developed before.

The issue of confidence was one of the three broad aims of the activity. We wanted the students to have increased confidence so that they could use the technology assessment skills in other situations. A few students left the summer school saying they intended to do just this in particular groups they belonged to at home. We feel that we made a start on our theoretical aim: to demonstrate that technology is not value free and that patterns of technological change in society are related to social and historical factors. There seems little doubt when examining the outcomes of the brainstorming, that as far as the two technologies examined, this position had been fully accepted by the students and is reflected in their work.

The practical aim; to teach a few basic skills of technology assessment and to develop feminist impact criteria was less well achieved. The brainstorming method was understood and students would probably have little trouble running a version of it themselves. However, it was consistently difficult for students to abstract the general feminist criteria from the issues specific to the technologies being assessed. Lists were generated but usually with a greater input from the tutor than in the rest of the activity. We are concerned about this, because we see the ability to abstract the general from the particular to be important in thinking theoretically about issues.

Although we are claiming overall success for the activity, we don't wish to disguise the fact that there were practical problems in running it. The most embarassing of these was tutors' inability to use the hardware and teaching aids properly!

Tutors reported equipment not working, visual material impossible to see, when in fact the problem was that the equipment had not been set up properly. Students found this irritating and amusing, that a technology activity should have tutors who so patently were not familiar with the teaching technology. All the tutors were women. It would appear that many of the issues we have discussed concerning women's alienation from technology is demonstrated by women tutors as well as women students.

After the evaluation of the activity in its first year, and improvements to it, it will now remain in its present form for the next six or seven years - the lifetime of the course. During this time some thousands of students - mostly women - will have the opportunity to participate in it.

(1) Bruce, Kirkup and Thomas Teaching Technology Assessment to Women

Available from: Gill Kirkup, IET, The Open University, Walton Hall, Milton Keynes MK7 6AA.

Please enclose a cheque or P.O. made out to The Open University for £3.00 (including postage and packing).

REFERENCES

Corlann Gee Bush, 1982, Taking Hold of Technology, American Association of Women, Washington, USA.

V Coates, (date unknown) Feminist Assessment of Technology, Lecture Outline, Policy Studies Programme, George Washington University.